SHORT PROGRAMS FOR INTERDISCIPLINARY RESEARCH TRAINING

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RFA Number: RFA-DK-04-003

Department of Health and Human Services (DHHS)

PARTICIPATING ORGANIZATION:
National Institutes of Health (NIH)
(http://www.nih.gov)

This RFA is developed as a NIH Roadmap initiative (http://nihroadmap.nih.gov). All NIH Institutes and Centers participate in roadmap initiatives. The RFA will be administered by the National Institute of Diabetes and Digestive and Kidney Diseases on behalf of the NIH.

CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER(S) 93.849

LETTER OF INTENT RECEIPT DATE: January 14, 2004; January 14, 2005

APPLICATION RECEIPT DATE: February 11, 2004; February 11, 2005

THIS RFA CONTAINS THE FOLLOWING INFORMATION

PURPOSE OF THIS RFA

The National Institutes of Health recognizes that fusion of information, research practices, and technologies from multiple disciplines can foster creative approaches to

previously intractable problems. The purpose of this RFA is to promote training in multiple disciplines so that this type of creative problem solving and fusion of disciplines into novel "interdisciplines" is more likely to occur. One example of an interdiscipline is bioengineering, in which individuals need to understand principles and methodologies of biology and engineering in order to pursue their research. Recognizing that interdisciplinary approaches are more likely to evolve if scientists are formally trained in multiple disciplines and that short, intensive training programs can be very effective at providing students with the fundamental aspects of a given discipline, this RFA seeks to promote the development of new short interdisciplinary training programs for scientists at all levels of their careers. These programs can involve varying ratios of didactic and research training, but should include both. The goal of all of the programs should be for the students to emerge with sufficient understanding of a new discipline(s) that they can meld it with their previous training to generate new interdisciplines with novel research strategies.

RESEARCH OBJECTIVES

The National Institutes of Health (NIH) is engaged in a series of activities collectively known as the "NIH Roadmap" whose goal, in keeping with the NIH mission of uncovering new knowledge about the prevention, detection, diagnosis, and treatment of disease and disability, is to accelerate both the pace of discovery in these key areas and the translation of therapies from bench to bedside. In the course of developing the NIH Roadmap, it has become clear that increasingly, scientific advances are being made at the interfaces of traditional disciplines, and that approaches to science are becoming more integrative. This requires a cooperative effort, typically in the form of investigators from diverse research backgrounds working collectively across traditional disciplinary boundaries to answer scientific questions and achieve specific endpoints. This also requires a workforce capable of crossing disciplinary boundaries and leading and participating in integrative and team approaches to complex biomedical problems. Building research teams for the future has therefore emerged as one of the major themes in Roadmap implementation. (Additional information about the NIH Roadmap can be found on the NIH website at: http://nihroadmap.nih.gov.)

NIH is particularly interested in developing a new interdisciplinary research workforce. An interdisciplinary approach is distinguished from a multidisciplinary approach in that a multidisciplinary approach brings experts from diverse disciplines to address collectively a common complex problem, each from his or her unique perspective. By contrast, an interdisciplinary approach is what results from the melding of two or more disciplines to create a NEW (interdisciplinary) science. Biophysics, biostatistics, bioinformatics, bioengineering, social neuroscience, and psychoneuroimmunology are just some examples of existing interdisciplinary sciences. NIH recognizes the value and enormous contributions that existing interdisciplinary approaches have made and are making to our understanding of health, disease, and disability. However, the Roadmap is focused on developing NEW interdisciplinary approaches and therefore the necessary interdisciplinary workforce.

NIH is proposing a series of initiatives that aim to provide investigators with the training to effectively lead and engage in integrative and team approaches to complex biomedical problems. These initiatives fall into three categories: programs for long-term interdisciplinary research training; short-term courses and research experiences; and curriculum development. Collectively, the initiatives provide opportunities for integration of disciplines at all stages of investigators' careers, facilitate communication among the disciplines, and ensure the development of necessary infrastructure to accomplish the building of the workforce for the research teams for the future. Common features of the proposed initiatives include having: comprehensive integrative approaches to solving complex biomedical problems; developing and implementing new curricula that integrate disparate disciplines; activities that promote cohesiveness among training program participants at all levels (faculty-student, student-student, and faculty-faculty); inclusion of training in the personal and professional skills necessary to lead and participate in multidisciplinary teams; outreach to the under-represented minority community to ensure their participation; monitoring of student progress and outcome; and self-evaluation of the training program.

Specific Objectives

This RFA seeks to promote the development and implementation of new short training programs that will provide students who are trained in one discipline with fundamental knowledge of one or more other disciplines. Recognizing the need for flexibility, the RFA will support 2 general types of programs: 1) Short Laboratory Courses (programs with a didactic emphasis on a particular discipline or complex biomedical and/or health research problem), and 2) Short-term Research Institutes (programs with a research emphasis on a particular discipline or complex biomedical and/or health research problem).

1. The Short Laboratory Courses are expected to recruit students from a similar academic discipline so that faculty can build upon a given knowledge base in lectures and laboratory instruction. The faculty is expected to provide expertise in different aspects of a given discipline(s) or complex biomedical and/or health problem. Lectures will form a substantial part of the course (>10 hrs/week). Laboratory instruction will be designed to teach methodologies, research design, and interpretation rather than to pursue individual research projects. Depending on the particular requirements of various disciplines, these courses are expected to be 3-8 weeks long.

A considerable degree of flexibility in design of these courses is desirable, but the general purpose of these courses is to facilitate the fusion of the students' discipline with that of the faculty. For example, a course could be designed to teach chemists enough about medicine to design novel tissue-specific drugs or drug delivery systems. Faculty might be recruited to teach the essentials of immunology, histology, and pharmacology. Laboratory instruction might involve methods of microscopy and toxicology. Another example would be a course designed to teach mathematicians enough about biology to develop models of systems that impact human health. Faculty might be recruited from multiple biological disciplines, such as medicine, molecular/cell biology, and

pharmacology. Lectures and laboratory instruction would involve the basics of these subjects as well as discussion/demonstration of mathematical models. It is expected that the faculty will know enough about the discipline in which their students have been trained to provide a vision of how this discipline can synergize with their own to result in new, interdisciplinary research opportunities.

2. The Short-term Research Institutes are expected to recruit students with either similar or diverse backgrounds, provide them with less than 10 hours/week didactic training, and involve them in an individual research project for 30 or more hours/week. Because these programs emphasize the value of "in the lab" training, which often requires more time than didactic training, they are expected to be 8-10 weeks in duration. The design of these programs can be very flexible. They can be similar in purpose to the Short Courses, with a goal of training students of similar academic background in a new discipline(s). Alternatively, they may involve students and faculty from multiple disciplines whose work is relevant to a common complex biomedical and/or health problem. The lectures or seminars should also reflect this theme.

For example, a course organized around a theme of diabetes might recruit students and faculty from general biology, immunology, medicine, psychology, and chemistry. The course could involve lectures on metabolism and causes of diabetes, autoimmune mechanisms, diabetic pathologies, behavioral issues, and tissue engineering. A student would choose to work with a faculty member who would provide research training in a discipline outside of the student's own. Faculty members would be expected to mentor the students and teach them how their own discipline might fuse with that of the student's to provide novel research opportunities. By exposing the students to many disciplines that impinge on a common problem and by providing them with multi-week research training in one of these, it is expected that the students will think in broader terms about the problem and be able to design novel research strategies to solve it.

Both the Short-term Research Institutes and the Short Laboratory Courses are expected to be designed for one of three target groups: 1) undergraduate students, 2) advanced predoctoral or postdoctoral students, or 3) senior scientists. The programs can be designed to train non-life scientists in life science disciplines; to train life scientists in non-life science disciplines; or to train life scientists of one discipline in one or more new life science disciplines if this training will lead to the creation of a new interdisciplinary science. NIH is particularly interested in programs that encourage the integration of mathematical, physical, behavioral, and social sciences with the traditional biomedical sciences. Acquisition of new knowledge and new laboratory skills that will lead to the creation of a new discipline are of fundamental importance to both types of programs.

MECHANISM OF SUPPORT

This RFA will use the NIH R13 award mechanism. Although R13 applications require specific programmatic approval prior to submission, this RFA constitutes the necessary prior approval for responsive applications. As an applicant you will be solely responsible

for planning, directing, and executing the proposed project. The anticipated award dates are September 30, 2004 and September 30, 2005. Applications that are not funded in the competition described in this RFA may be resubmitted as NEW investigator-initiated applications using the standard receipt dates for NEW applications described in the instructions to the PHS 398 application. Future unsolicited, competing-continuation applications based on this project will compete with all investigator-initiated applications and will be reviewed according to the customary peer review procedures.

This RFA uses just-in-time concepts. It also uses the modular budgeting format. (see http://grants.nih.gov/grants/funding/modular/modular.htm). Specifically, if you are submitting an application with direct costs in each year of $250,000 or less, use the modular budget format. This program does not require cost sharing as defined in the current NIH Grants Policy Statement at http://grants.nih.gov/grants/policy/nihgps_2001/part_i_1.htm.

FUNDS AVAILABLE

This RFA will use the R13 award mechanism and has two application receipt dates: February 11, 2004 and February 11, 2005. The anticipated award dates are September 30, 2004 and September 30, 2005. The NIH plans to commit $5,200,000, over three years to support 6-8 new grants in 2004 and 3-4 additional grants in 2005. An applicant may request a project period of up to three years for the 2004 receipt date and up to two years for the 2005 receipt date. Applicants may request a budget for direct costs of up to $200,000 per year. Because the nature and scope of the proposed research will vary from application to application, it is anticipated that the size and duration of each award will also vary. Although the financial plans of the Roadmap provide support for this program, awards pursuant to this RFA are contingent upon the availability of funds and the receipt of a sufficient number of meritorious applications.

ELIGIBLE INSTITUTIONS

You may submit (an) application(s) if your institution has any of the following characteristics:

o For-profit or non-profit organizations
o Public or private institutions, such as universities, colleges, hospitals, and laboratories
o Eligible agencies of the Federal government
o Domestic or foreign institutions/organizations

INDIVIDUALS ELIGIBLE TO BECOME PRINCIPAL INVESTIGATORS

Any individual with the skills, knowledge, and resources necessary to develop and implement the proposed programs is invited to work with their institution to develop an application for support. The faculty participating in the programs are expected to participate as key personnel or co-investigators. Individuals from under-represented racial

and ethnic groups as well as individuals with disabilities are always encouraged to apply for NIH programs.

SPECIAL REQUIREMENTS

The NIH recognizes that individual institutions will be positioned to respond in different ways to the opportunities presented in this RFA. However, all programs are expected to provide substantive interdisciplinary didactic and research training experiences for the students and will therefore involve faculty that cross department, school, or institution boundaries. Students supported by these programs are expected to receive instruction and conduct research in fields outside of their own. All applications should address the challenges of melding two or more different fields and their associated cultures. Successful programs will have addressed the following:

Faculty Involvement: The faculty are expected to be experts in their own discipline as well as knowledgeable of the discipline(s) of the student pool. The effort of the faculty should be consistent with time required for lecturing and mentoring during the course of the program.

Student Recruitment: Students in the targeted disciplines should be clearly identified. The application should include recruitment and outreach plans, particularly with respect to efforts to increase the depth and ethnic diversity of the student pool.

Institutional commitment: For the Short Laboratory Courses, laboratory training space should be identified and committed by the Institution. This may be indicated via a letter from a high-ranking institutional official.

Program self evaluation: The program should determine its baseline with respect to interdisciplinary student training, set measurable goals for itself, and establish milestones and measures of success for achieving them.

Student/Faculty Interaction: Interactions among students and between students and faculty will be crucial in establishing long term relationships and collaborations that are essential for the establishment of new disciplines. Applications should address how these interactions will be fostered. Examples of mechanisms fostering program cohesiveness include journal clubs and social gatherings.

Leadership and teambuilding skills: These skills will be critical to the future success of the students produced by these programs. Plans should be developed and put in place to help students and interested faculty develop the leadership skills and understanding of the challenges of group dynamics necessary to establish and maintain a genuinely integrated research program.

WHERE TO SEND INQUIRIES

We encourage inquiries concerning this RFA and welcome the opportunity to answer questions from potential applicants. Inquiries may fall into three areas: scientific/research, peer review, and financial or grants management issues:

o Direct your questions about scientific/programmatic issues to:

Betsy Wilder, Ph.D.
Division of Kidney, Urologic, and Hematologic Diseases
National Institute of Diabetes, Digestive, and Kidney Diseases/NIH
6707 Democracy Boulevard, Room 623
Bethesda, MD 20892
Telephone: (301) 594-7717
FAX: (301) 480-3510
Email: ew136e@nih.gov

o Direct your questions about peer review issues to:

Francisco O. Calvo, Ph.D.
Chief, Review Branch
National Institute of Diabetes and Digestive and Kidney Diseases
6707 Democracy Boulevard, Room 752
Bethesda, MD 20892-5456
Telephone: (301) 594-8897
FAX: (301) 480-3505
Email: fc15y@nih.gov

o Direct your questions about financial or grants management matters to:

Ms. Carolyn Kofa
Grants Management Branch
National Institute of Diabetes, Digestive, and Kidney Diseases/NIH
6707 Democracy Boulevard, Room 727
Bethesda, MD 20892
Telephone: (301) 594-7687
FAX: (301) 480-4237
Email: ck104i@nih.gov

LETTER OF INTENT

Prospective applicants are asked to submit a letter of intent that includes the following information:

o Descriptive title of the proposed program

o Name, address, and telephone number of the Principal Investigator
o Names of other key personnel
o Participating institutions
o Number and title of this RFA

Although a letter of intent is not required, is not binding, and does not enter into the review of a subsequent application, the information that it contains allows IC staff to estimate the potential review workload and plan the review.

The letter of intent is to be sent by the date listed at the beginning of this document. The letter of intent should be sent to:

Chief, Review Branch
Division of Extramural Activities, NIDDK
6707 Democracy Boulevard, Rm. 752 MSC 5452
Bethesda, MD 20892-5452
(for express/courier service: Bethesda, MD 20817)
Telephone: (301) 594-8885
FAX: (301) 480-3505

SUBMITTING AN APPLICATION

Applications must be prepared using the PHS 398 research grant application instructions and forms (rev. 5/2001). Applications must have a DUN and Bradstreet (D&B) Data Universal Numbering System (DUNS) number as the Universal Identifier when applying for Federal grants or cooperative agreements. The DUNS number can be obtained by calling (866) 705-5711 or through the web site at http://www.dunandbradstreet.com/. The DUNS number should be entered on line 11 of the face page of the PHS 398 form. The PHS 398 document is available at http://grants.nih.gov/grants/funding/phs398/phs398.html in an interactive format. For further assistance contact GrantsInfo, Telephone (301) 435-0714, Email: GrantsInfo@nih.gov.

USING THE RFA LABEL: The RFA label available in the PHS 398 (rev. 5/2001) application form must be affixed to the bottom of the face page of the application. Type the RFA number on the label. Failure to use this label could result in delayed processing of the application such that it may not reach the review committee in time for review. In addition, the RFA title and number must be typed on line 2 of the face page of the application form and the YES box must be marked. The RFA label is also available at: http://grants.nih.gov/grants/funding/phs398/labels.pdf.

SENDING AN APPLICATION TO THE NIH: Submit a signed, typewritten original of the application, including the Checklist, and three signed, photocopies, in one package to:

Center For Scientific Review
National Institutes Of Health
6701 Rockledge Drive, Room 1040, MSC 7710
Bethesda, MD 20892-7710
Bethesda, MD 20817 (for express/courier service)

At the time of submission, two additional copies of the application and all copies of the appendix material must be sent to:

Chief, Review Branch
Division of Extramural Activities, NIDDK
6707 Democracy Boulevard, Rm. 752 MSC 5452
Bethesda, MD 20892-5452
(for express/courier service: Bethesda, MD 20817)

APPLICATION PROCESSING: Applications must be received on or before the application receipt date listed in the heading of this RFA. If an application is received after that date, it will be returned to the applicant without review.

Although there is no immediate acknowledgement of the receipt of an application, applicants are generally notified of the review and funding assignment within 8 weeks.

The Center for Scientific Review (CSR) will not accept any application in response to this RFA that is essentially the same as one currently pending initial review, unless the applicant withdraws the pending application. However, when a previously unfunded application, originally submitted as an investigator-initiated application, is to be submitted in response to an RFA, it is to be prepared as a NEW application. That is, the application for the RFA must not include an Introduction describing the changes and improvements made, and the text must not be marked to indicate the changes from the previous unfunded version of the application.

PEER REVIEW PROCESS

Upon receipt, applications will be reviewed for completeness and responsiveness by the NIH. Incomplete and/or nonresponsive applications will not be reviewed.

Applications that are complete and responsive to the RFA will be evaluated for scientific and technical merit by an appropriate peer review group in accordance with the review criteria stated below. As a part of the initial merit review, all applications will:

o Undergo a process in which only those applications deemed to have the highest scientific merit, generally the top half of the applications under review, will be discussed and assigned a priority scoreo Receive a written critique
o Receive a second level review by an appropriate National Diabetes, and Digestive, and Kidney Disease Advisory Council.

REVIEW CRITERIA

The goals of NIH-supported research are to advance our understanding of biological systems, improve the control of disease, and enhance health. In the written comments, reviewers will be asked to evaluate the application in order to judge the likelihood that the proposed research will have a substantial impact on the pursuit of these goals. In addition, the scientific review group will address and consider each of the following criteria in assigning the application's overall score, weighting them as appropriate for each application.

Program Goals:
o goals of the program and how they will foster the formation of new disciplines

Program direction:
o Research and training leadership and experience of the PI
o Adequacy of the program administration.

Participating faculty members:
o Composition of the faculty (by rank and distribution in different fields and departments)
o Mechanism and criteria for inclusion of the faculty in the program
o Publication records
o Nature and breadth of research in areas pertinent to this announcement
o Evidence of collaboration and cooperation
o Experience in the supervision of research training

Training program:
o Goals of program and rationale for program organization
o Mechanism for the selection and recruitment of students
o Mechanism to monitor and guide the students
o Nature and extent of research opportunities and courses in targeted scientific areas
o Provisions/activities to promote cohesiveness in the program
o Opportunities for collaboration
o Integration of the targeted disciplines or adequacy of plans for integration
o Flexibility for students to choose course or laboratory work in targeted scientific areas
o Provision of leadership/team building training

Student pool:
o Availability of highly qualified candidates (scientific background, academic credentials)
o Caliber of potential students and others identified with the program

Research and training environment:
o Institutional support for the training program
o Adequacy of plans for student/faculty housing and support during the training period

o Facilities and resources available to the program

Program Self Evaluation:
o Assessment of baseline: Methods of determining the level of interdisciplinary training students may have prior to beginning the program
o Goals and milestones: Reasonableness of goals. Appropriateness of the milestones in achieving the goals.

TRAINING IN RESPONSIBLE CONDUCT OF RESEARCH: Applications must include a description of a program to provide formal or informal instruction in scientific integrity or the responsible conduct of research. Applications without plans for instruction in the responsible conduct of research will be considered incomplete and will be returned to the applicant without review. The appropriateness of topics, format, amount, and nature of faculty participation, and the frequency and duration of instruction. All individuals supported by these grants must receive instruction in the responsible conduct of research. For more information on this provision, see the NIH Guide for Grants and Contracts, Volume 21, Number 43, November 27, 1992, see http://grants.nih.gov/grants/guide/notice-files/not92-236.html .

PROTECTION OF HUMAN SUBJECTS FROM RESEARCH RISK: The involvement of human subjects and protections from research risk relating to their participation in the proposed research will be assessed. (See criteria included in the section on Federal Citations, below).

INCLUSION OF WOMEN, MINORITIES AND CHILDREN IN RESEARCH: The adequacy of plans to include subjects from both genders, all racial and ethnic groups (and subgroups), and children as appropriate for the scientific goals of the research. Plans for the recruitment and retention of subjects will also be evaluated. (See Inclusion Criteria in the sections on Federal Citations, below).

CARE AND USE OF VERTEBRATE ANIMALS IN RESEARCH: If vertebrate animals are to be used in the project, the five items described under Section f of the PHS 398 research grant application instructions (rev. 5/2001) will be assessed.

BUDGET: The reasonableness of the proposed budget and the requested period of support in relation to the proposed research.
Allowable expenses:
o Laboratory supplies
o Student and faculty housing
o Student stipends
o Faculty salary support

RECEIPT AND REVIEW SCHEDULE

Letter of Intent Receipt Date: January 14, 2004 January 14, 2005
Application Receipt Date: February 11, 2004 February 11, 2005
Peer Review Date: June/July 20004 June/July 2005
Council Review: September 2004 September 2005
Earliest Anticipated Start Date: September 30, 2004 September 30, 2005

AWARD CRITERIA

Award criteria that will be used to make award decisions include:

o Scientific merit (as determined by peer review)
o Availability of funds
o Programmatic priorities.

REQUIRED FEDERAL CITATIONS

PUBLIC ACCESS TO RESEARCH DATA THROUGH THE FREEDOM OF INFORMATION ACT: The Office of Management and Budget (OMB) Circular A-110 has been revised to provide public access to research data through the Freedom of Information Act (FOIA) under some circumstances. Data that are (1) first produced in a project that is supported in whole or in part with Federal funds and (2) cited publicly and officially by a Federal agency in support of an action that has the force and effect of law (i.e., a regulation) may be accessed through FOIA. It is important for applicants to understand the basic scope of this amendment. NIH has provided guidance at http://grants.nih.gov/grants/policy/a110/a110_guidance_dec1999.htm.

Applicants may wish to place data collected under this PA in a public archive, which can provide protections for the data and manage the distribution for an indefinite period of time. If so, the application should include a description of the archiving plan in the study design and include information about this in the budget justification section of the application. In addition, applicants should think about how to structure informed consent statements and other human subjects procedures given the potential for wider use of data collected under this award.

URLs IN NIH GRANT APPLICATIONS OR APPENDICES: All applications and proposals for NIH funding must be self-contained within specified page limitations. Unless otherwise specified in an NIH solicitation, Internet addresses (URLs) should not be used to provide information necessary to the review because reviewers are under no obligation to view the Internet sites. Furthermore, we caution reviewers that their anonymity may be compromised when they directly access an Internet site.

HEALTHY PEOPLE 2010: The Public Health Service (PHS) is committed to achieving

the health promotion and disease prevention objectives of "Healthy People 2010," a PHS-led national activity for setting priority areas. This RFA is related to one or more of the priority areas. Potential applicants may obtain a copy of "Healthy People 2010" at http://www.healthypeople.gov/.

AUTHORITY AND REGULATIONS: This program is described in the Catalog of Federal Domestic Assistance at http://www.cfda.gov/ and is not subject to the intergovernmental review requirements of Executive Order 12372 or Health Systems Agency review. Awards are made under the authorization of Sections 301 and 405 of the Public Health Service Act as amended (42 USC 241 and 284) and under Federal Regulations 42 CFR 52 and 45 CFR Parts 74 and 92 . All awards are subject to the terms and conditions, cost principles, and other considerations described in the NIH Grants Policy Statement. The NIH Grants Policy Statement can be found at http://grants.nih.gov/grants/policy/policy.htm

The PHS strongly encourages all grant recipients to provide a smoke-free workplace and discourage the use of all tobacco products. In addition, Public Law 103-227, the Pro-Children Act of 1994, prohibits smoking in certain facilities (or in some cases, any portion of a facility) in which regular or routine education, library, day care, health care, or early childhood development services are provided to children. This is consistent with the PHS mission to protect and advance the physical and mental health of the American people.

Return to Volume Index

Return to NIH Guide Main Index

Department of Health and Human Services

National Institutes of Health (NIH)
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